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EXAMINER	
D AGOSTA, STEPHEN M	

ART UNIT	PAPER NUMBER
2683	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/928,865	JUDD ET AL.	
	Examiner	Art Unit	
	Stephen M. D'Agosta	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12-9-04 have been fully considered but they are not persuasive.

1. The applicant's amendment to the figure 1 overcomes the examiner's objection.

2. The applicant argues that the prior art does not teach (and one of ordinary skill would not make) the claimed invention from Ke and Feurstein (pg. 16-17). The examiner disagrees – firstly Ke does teach his invention receiving digital data (C4, L11-27) which requires conversion from D-to-A (and A-to-D) while Feursetein teaches a baseband switch/multiplexor (see figure 1). Hence one skilled would use D-to-A's and A-to-D's along with baseband switches to converge analog and digital signals onto a common RF antenna. Feurstein shows (fig 1) the use of antennas, A/D's and multiplexers and Ke teaches combining/sharing BTS's (as pointed out by the applicant, see page 16-17). The examiner is not swayed simply because one skilled can move the A/D and D/A hardware to different locations (note that Ke's circuitry and Feurstein's circuitry are located at different places).

3. The applicant argues that the prior art does not teach selecting an individual beam for each service provider. The examiner disagrees since Ke teaches sharing BTS's while Feurstein teaches selecting the best beams for a given cell (C2, L49-60) which the examiner interprets as selecting a beam for each service provider since he can analyze which RF frequencies each provider uses and select based on analysis an optimal antenna beam(s).

4. The applicant added "digital filtering" to various claims in an attempt to overcome the prior art. The examiner is not swayed since the prior art cited along with A/D and D/A converters (as taught by Ke, Feurstein) are combined to read on the claims.

5. The applicant argues that the filtering method described by Ke/Feurstein is different than that taught by the applicant (pages 18-19). Firstly, the examiner notes that the claims are written broadly and open to interpretation. Secondly, the examiner has provided a line-by-line citing of each claim's limitations and where the teachings can be found and reasons for combining. Lastly, Ke and Feurstein teaches an analog RF system transmitting both analog and digital signals with A/D and D/A hardware positioned at different locations in the data path. Hence one skilled can reposition them to more closely read on the applicant's design (as pointed out by the examiner's rejection).

6. The applicant argues that Ke does not teach digital band processing and/or individual beams for service providers (pages 20-21). The examiner disagrees since Ke teaches sharing BTS's and support for analog/digital data (see above). Feurstein teaches selecting a preferred beam(s) from many antenna beams and hence reads on selecting individual beams for a service provider.

7. The applicant then makes several arguments that the examiner's reference to hardware (eg. MUX) and use of Official Notice to teach optical links are not justified (page 21-22). The examiner disagrees since the prior art combines to read on sharing a common antenna for RF transmission of analog/digital data while one skilled realizes that optical communications would be used to minimize errors on a landline.

8. The remaining arguments (pages 22-24) simply state that these claims are allowable based on the previous arguments. Hence the examiner was not swayed before and therefore is not swayed by these arguments (please refer to the rejection which points out how the prior art combines to read on these claims).

9. The previous rejection is attached for informational purposes only.

10. **Having re-read the claims, the examiner believes a more favorable outcome may occur if the applicant were to amend claim 16 with claims 22, 23 and 24.**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 9-13, 16-20, 22, 25-29, 24-39, 42, 44-46, 49 and 54-55 rejected under 35 U.S.C. 103(a) as being unpatentable over Ke et al. US 6,658,263 and further in view of Feuerstein et al. US 6,055,230 (hereafter Ke and Feuerstein).

As per **claims 1, 16, 25, 34, 44, 49, 54 and 55**, Ke teaches a system for sharing a cell tower among multiple service providers (abstract and figure 1) comprising:

Converter circuitry to convert the antenna signals associated with the antenna between the communication frequency band and a digital band (C3, L5-33 teaches cellular RF frequency ranges which are converted to digital signals when transmitted from BTS to MSC, PSTN, etc.),

Filtering circuitry defining individual portions of the digital band, a band portion defined for signals of each of at least two individual service providers (figure 1 and figure 2 shows that each different system's data is "filtered" via combiners and duplexors to ensure the proper signals are routed to/from the antenna. Also see figure 3a and C4, L57 to C5, L6 which teaches analog filtering),

Signal processing circuitry for each of the at least two service providers, the signal processing circuitry operable to process channel signals associated with the individual band portions defined for the individual service providers and to simultaneously drive the antenna to define at least one individual beam for each individual service provider (figures 1 and 2 show the circuitry required – see figure 2, #112, #116, #154, #156 -- that "process" channels for each band and that simultaneously drives the common antenna).

The examiner notes that the converter, filtering and signal processing circuitry is inherent since conversion from digital to RF Cellular inherently requires a D-to-A (and A-to-D) conversion and the associated converter/filtering/signal processing hardware that goes along with said D-to-A conversion. The examiner puts forth that this "circuitry" can be located virtually anywhere in the signal path of Ke's figure 2 and even "behind" the input/outputs shown.

But is silent on an antenna having an array of elements operable to define multiple individual beams for signals in a communication frequency band.

Feuerstein teaches use of a multi-beam antenna and selection of the best beams (abstract, figures 1-3 and C2, L33-67). The examiner also notes that Feuerstein teaches converting, filtering and signal processing C4, L30-67).

With further regard to claim 16, Ke teaches a tower (eg. antenna structure) [see abstract and figure 1, #180) **but is silent on** sectors. Feuerstein teaches multiple beams/beam switching (title, abstract) which is well known to be used in sectorized antenna systems (refer to Reudink, not cited, see figures 1a, 1b, 2 and C1, L35-67).

With further regard to claims 25 and 49, Ke **is silent on** a microwave backhaul system. The examiner notes that one skilled can utilize any wired/wireless means at any frequency necessary to transmit data from point to point. Hence one skilled would use the Ke/Feuerstein combination to provide support for a microwave backhaul system that accommodates the system as described in claim 16 above (reference Struhsaker, not cited, who teaches wired/wireless connectivity including T1, microwave and SONET).

With further regard to claims 54 and 55, Ke inherently requires used of A/D conversion in order to connect to the MSC/PSTN via digital communication links (eg. T1, etc.). As noted above, Feuerstein discloses this same hardware as well.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke, such that the antenna has an array of elements operable to define multiple individual beams for signals in a communication frequency band, to provide means for using and selecting the best beams.

As per **claim 2**, Ke in view of Feuerstein teaches claim 1 **but is silent on** wherein the converter circuitry includes frequency converter circuitry to convert the antenna signals between the frequencies of the communication frequency band and intermediate frequencies for the band and;

Digital converter circuitry to convert the signals between the intermediate frequencies and a digital band.

Feuerstein teaches conversion from RF to intermediate frequency and A/D or D/A conversion (C4, L30-47).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that frequencies are converted from analog to digital, to provide means to convert from digital links between the PSTN-to-BTS to RF links for BTS-to-mobile user.

As per **claims 3, 17, 26, 35 and 45**, Ke in view of Feuerstein teaches claim 1/16/25/34/44 **but is silent on** wherein the signal processing circuitry defines multiple individual beams for each individual service provider.

Feuerstein teaches use of a multi-beam antenna and selection of the best beams (abstract, figures 1-3 and C2, L33-67). One skilled would utilize Feurstein's ability to use multiple beams with Ke's ability to support multiple service providers.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the signal processing circuitry defines multiple individual beams for each individual service provider, to provide individual beams for each provider and selection of the best beam to support communications.

As per **claim 4**, Ke in view of Feuerstein teaches claim 1 **but is silent on** further comprising a digital multiplexor to duplicate the signals of the digital band for multiple service providers prior to defining individual portions of the digital band.

Feuerstein teaches use of a Digital Switch Mux (figure 2, #21-1 or #21-2 or #21-n) which is located prior to defining individual portions of the digital band just after the A/D converter.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that a digital multiplexor to duplicate the signals of the digital band for multiple service providers prior to defining individual portions of the digital band, to provide means for correctly muxing/demuxing data transmitted to/from the BTS when it is converted (A/D or D/A).

As per **claims 5, 18, 27 and 36**, Ke in view of Feuerstein teaches claim 1/16/25/34 **but is silent on** wherein said antenna comprises an array of elements arranged in columns of multiple elements, the signal processing circuitry defining the individual beams by individually controlling each of the columns of the array.

Feuerstein teaches columns of multiple elements and signal processing circuitry defining the individual beams by individually controlling each of the columns of the array (see figure 2, shows multiple sets of hardware arranged in a column and individually controlling each beam, ie. Beam 1, Beam 2.....Beam 12, etc. Also see figures 1 and 3).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the array is arranged in columns, to provide means for a modular design whereby individual signal paths can be added with a "column" of hardware.

As per **claims 6, 19, 28 and 37**, Ke in view of Feuerstein teaches claim 1/16/25/34 **but is silent on** wherein the signal processing circuitry defines the individual beams by individually controlling each element of the array.

Feuerstein teaches individual control of element of the array (see figure 2 Channel element/Controller, #26-1, #26-2, etc. and Switch Decision Controllers, #22-1, #22-2, etc. and C7, L49-61). The examiner interprets this hardware as providing individual control since they only control one beam each.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the signal processing circuitry defines the individual beams by individually controlling each element of the array, to provide means for controlling each individual beam for optimal RF transmission.

As per **claims 7, 20, 29, 38 and 46**, Ke in view of Feuerstein teaches claim 1/16/25/34/44 **but is silent on** wherein the signal processing circuitry defines the individual beams simultaneously.

Feuerstein teaches controlling the beams simultaneously since the TCS takes the traffic channel outputs from each channel and routes them (eg. simultaneously) to the best forward path antenna beams (C7, L49-61).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the signal processing circuitry defines the individual beams simultaneously, to provide a quick and efficient system that can simultaneously transmit/receive RF data from multiple users.

As per **claim 9**, Ke in view of Feuerstein teaches claim 2 **but is silent on** further comprising fiber converters coupled between the digital converter circuit and the signal processing circuitry to optically pass the signals therebetween.

The examiner takes **Official Notice** that data transmission provides higher bit rates and higher fidelity than copper landlines and would be used by one skilled to increase bandwidth while lowering bit errors when connecting the BTS back to the MSC/PSTN network (refer to Struhsaker who discloses fiber optic links).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that fiber converters couple between the digital converter circuit and the signal processing circuitry to optically pass the signals therebetween, to provide a high-bandwidth, low error-rate communications conveyance between various network elements of the system.

As per **claim 10**, Ke in view of Feuerstein teaches claim 1 wherein the converter circuitry divides the communication frequency into multiple band portions for conversion (C3, L5-31 teaches use of a common antenna to support different cellular frequencies which reads on the claim).

As per **claims 11 and 22**, Ke in view of Feuerstein teaches claim 2/16 **but is silent on** wherein the frequency converter circuit divides the communication frequency band into multiple bands for conversion and the digital converter circuit individually converts each of the multiple bands.

Feuerstein teaches A/D and D/A converting and intermediate frequency conversion. (C4, L30-67 teaches frequency conversion and A/D conversion). One skilled would use this same hardware to support Ke's multiple service providers.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the frequency converter circuit divides the communication frequency band into multiple bands for conversion and the digital converter circuit individually converts each of the multiple bands, to provide means for performing A/D and D/A conversions for each of the bands supported.

As per **claims 12 and 39**, Ke in view of Feuerstein teaches claim 1/34 and a plurality of communications frequencies (C3, L5-33) **but is silent on** wherein the antenna array of elements is operable to define multiple, individual beams for signals.

Feuerstein teaches an antenna array of elements that is operable to define multiple individual beams for signals (see figures 1-3 show multiple beams transmitted).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the antenna array of elements is operable to define multiple, individual beams for signals, to provide means for the antenna to steer/control multiple beams which support RF communications to a plurality of mobile users.

As per **claim 13**, Ke in view of Feuerstein teaches claim 12 a frequency multiplexor coupled between the antenna and the converter circuitry to provide transmit and receive signals for each of the plurality of communication frequency bands for individual conversion (figure 2, #150 teaches a first/second combiner filter and summer which reads on a frequency multiplexor supporting the plurality of frequency bands).

As per **claim 42**, Ke in view of Feuerstein teaches claim 34 further comprising defining the frequency band as multiple band portions by converting antenna signals (C3, L5-33) **but is silent on** associated with the beams between the communication frequency band and a digital band, and dividing the digital bank into multiple band portions.

Feuerstein teaches A/D conversion (C4, L30-47) to convert baseband voice signals into RF transmissions. One skilled realizes that both the digital and analog data need to be "divided" and/or multiplexed such that each signal can be rebuilt at the

receiving end. Hence, Feuerstein's design inherently requires dividing the digital bank into multiple band portions (eg. via TDMA).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the beams between the communication frequency band and a digital band, and dividing the digital bank into multiple band portions, to provide means for A/D and D/A conversion whereby the digital signals are multiplexed/divided based on each service provider's data.

Claims 8, 21 and 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Ke and Feuerstein as applied to claims 1/16/25/34/44/49 above and further in view of Reudink et al. US 5,889,494 (hereafter Reudink).

As per **claims 8, 21 and 30**, Ke in view of Feuerstein teaches claim 1/16/25 **but is silent on** wherein the individual beams are oriented in different directions.

While sectored antennas are well known in the art as providing individual sectors/beams being oriented in different directions, the examiner puts forth **Reudink** who teaches a sector cell shaping system that has supports beams in different directions (see figures 1a, 1b, 2 and C1, L35-67).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the individual beams are oriented in different directions, to provide upwards of 360degrees of cellular coverage from each antenna BTS.

Claims 14-15, 23-24, 32-33, 40-41 and 47-48 rejected under 35 U.S.C. 103(a) as being unpatentable over Ke and Feuerstein as applied to claims 1/16/25/34/44/49 above and further in view of Roberts et al. US 4,845,504 (hereafter Roberts).

As per **claims 14, 23, 32, 40 and 47**, Ke in view of Feuerstein teaches claim 1/16/25/34/44 **but is silent on** wherein the signal processing circuitry is further operable to selectively drive the antenna to steer at least one of the defined beams.

Roberts teaches each of receive antenna towers is connected to a beam steering network (C4, L10-16).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the signal processing circuitry is further operable to selectively drive the antenna to steer at least one of the defined beams, to provide means to control the antenna system to steer it for optimal RF communications with a plurality of mobile users.

As per **claims 15, 24, 33, 41 and 48**, Ke in view of Feuerstein and Keskitalo teaches claim 14/23/32/40/45 wherein the beam is steered in at least one of azimuth and elevation.

Roberts teaches Each of the sixteen receive antenna towers is connected to a beam steering network for positioning the receive sector beams in three different azimuth positions and three different elevation positions (C4, L10-16).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the beam is steered in at least one of azimuth and elevation, to provide optimal RF communications by having the ability to steer the beam to different positions.

Claims 31, 43 and 50-51 rejected under 35 U.S.C. 103(a) as being unpatentable over Ke and Feuerstein as applied to claims 34 above and further in view of Struhsaker et al. US 6,188,912 (hereafter Struhsaker).

As per **claims 31 and 43**, Ke in view of Feuerstein teaches claim 25/34 **but is silent on** the antenna array of elements is operable to define multiple individual beams in a sector for signals in a plurality of microwave backhaul frequency bands.

Struhsaker teaches a base station supporting wireless local loop (WLL) and can also be configured to support a hybrid combination of wired and wireless channels. The E1 and ADM card set could, for example, be situated at the central office and the other cards be positioned at a remote location so as to be better located for wireless coverage. The architecture of the present invention allows for the wireless side to use a long distance driver that has a concentrated remote access that can use either microwave backhaul, copper, or fiberoptic. The wireless part could then be situated for better wireless transmission. Note that the interface described here is an E1 interface, however, a OC1, OC3, or other interface may also be used (C9,L57 to C10, L7 and figure 2 shows optional Microwave Link #208-209).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the antenna array of elements is operable to define multiple individual beams in a sector for signals in a plurality of microwave backhaul frequency bands, to provide means for a modular design that supports wired/wireless links from the BTS to the MSC/PSTN.

As per **claim 50**, Ke in view of Feuerstein teaches claim 49 **but is silent on** further comprising individual microwave backhaul beams for each individual service provider.

Struhsaker teaches a base station supporting wireless local loop (WLL) and the architecture allows for the wireless side to use a long distance driver that has a concentrated remote access that can use either microwave backhaul, copper, or fiberoptic (C9,L57 to C10, L7 and figure 2 shows optional Microwave Link #208-209).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that microwave backhaul

is used, to provide means for a modular design that supports wired/wireless links between the BTS and MSC/PSTN.

As per **claim 51**, Ke in view of Feuerstein teaches claim 49 **but is silent on** comprising generating microwave backhaul beams simultaneously.

Feuerstein teaches controlling the beams simultaneously since the TCS takes the traffic channel outputs from each channel and routes them (eg. simultaneously) to the best forward path antenna beams (C7, L49-61).

Struhsaker teaches a base station supporting wireless local loop (WLL) and the architecture allows for the wireless side to use a long distance driver that has a concentrated remote access that can use either microwave backhaul, copper, or fiberoptic (C9,L57 to C10, L7 and figure 2 shows optional Microwave Link #208-209).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that comprising generating microwave backhaul beams simultaneously, to provide quick and efficient RF support to the multiple mobile users.

Claims 52-53 rejected under 35 U.S.C. 103(a) as being unpatentable over Ke and Feuerstein as applied to claims 49 above and further in view of Roberts and Struhsaker.

As per **claim 52**, Ke in view of Feuerstein teaches claim 49 **but is silent on** wherein the signal processing circuitry is further operable to selectively drive the antenna to steer at least one of the defined beams.

Roberts teaches each of receive antenna towers is connected to a beam steering network (C4, L10-16).

Struhsaker teaches a base station supporting wireless local loop (WLL) and the architecture allows for the wireless side to use a long distance driver that has a concentrated remote access that can use either microwave backhaul, copper, or fiberoptic (C9,L57 to C10, L7 and figure 2 shows optional Microwave Link #208-209).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that the signal processing circuitry is further operable to selectively drive the antenna to steer at least one of the defined beams, to provide control of the beam for optimal RF communications between BTS and mobile user.

As per **claim 53**, Ke in view of Feuerstein and Keskitalo teaches claim 52 **but is silent on** wherein the beam is steered in at least one of azimuth and elevation.

Roberts teaches Each of the sixteen receive antenna towers is connected to a beam steering network for positioning the receive sector beams in three different azimuth positions and three different elevation positions (C4, L10-16).

Struhsaker teaches a base station supporting wireless local loop (WLL) and the architecture allows for the wireless side to use a long distance driver that has a concentrated remote access that can use either microwave backhaul, copper, or fiberoptic (C9,L57 to C10, L7 and figure 2 shows optional Microwave Link #208-209).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Ke in view of Feuerstein, such that wherein the beam is steered in at least one of azimuth and elevation, to provide control of the beam for optimal RF communications between BTS and mobile user.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 703-306-5426. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen D'Agosta
PRIMARY EXAMINER
3-1-05